H
W N
Wagner, Heindel, and Noyes, Inc.
• Consulting Hydrogeologists
• Engineers
• Environmental Scientists
P.O. Box 1629 Burlington, Vermont 05402-1629
802-658-0820
FAX: 802-860-1014

February 15, 1995

Approved by Joe Merone March 10, 1995

Mr. Michael W. Young
Sites Management Section
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05671

RE: Former Moon and Sons Site
South Hero, Vermont (Site #90-0414)
Site Assessment Report

Dear Mike:

This letter/report summarizes work completed by Wagner, Heindel, and Noyes, Inc. at the former Moon & Sons property in South Hero, Vermont (previously the McDonough Service Station; currently the South Hero Mobil and Quick Stop), as specified in the work plan approved by your office on May 2, 1994. I have organized the information collected in accordance with work items 1 - 4 on page 2 of your January 10, 1994 letter.

1. **Additional monitor wells should be installed along the northern side of Route 2 to determine if the utility trench is indeed intercepting groundwater flowing to the north as suspected.**

As specified in the work plan, monitor wells MW-15 and MW-16 were installed on the north side of Route 2. Authorization was obtained from the Agency of Transportation in August 1994 to install these wells in the right-of-way of Route 2. A third monitor well was installed in a test pit located at the west extremity of the site, as described in the work plan.

A water table map based on measurements collected September 16, 1994 can be found on page 1 of Appendix 1. Elevations have been calculated from the October 21, 1994 survey (Appendix 1, page 5), which was necessitated by the shifting of wells as previously discussed. The water table map, based on measurements from the three new wells and from pre-existing shallow wells at the site, confirms that the dominant groundwater flow direction is to the northwest. The monitoring well array is not tight enough to show whether the water table is diverted or otherwise influenced by the presence of the utility trench.

Water quality samples were collected from all monitoring wells on the site on September 16, 1994. A contaminant distribution map can be found on page 2 of Appendix 1, followed by a summary of water quality results on page 3. Laboratory reports can be found in Appendix 2.

While contamination was observed in wells south of the trench (MW-7, MW-14), the new wells north of Route 2 (MW-15, MW-16) showed no contamination whatsoever. Thus, the contaminant distribution map does suggest that the utility trench serves as a barrier or interceptor to the northward migration of contaminants.

2. It needs to be determined if contamination is actually entering the storm drain or water supply system lines. Samples should be collected at points along the storm drain outfall to determine if Keeler Bay or wetlands have been impacted by site contamination.

On September 20, 1994, water quality samples were collected from two locations along the storm drain (the southeast storm drain and the northwest storm drain indicated on the attached maps). Results are summarized on page 3 of Appendix 1; laboratory reports can be found in Appendix 3. No contaminants were detected in these samples. The sample collected from the Keeler Bay outfall from the storm drain system was also uncontaminated.

Samples were also collected from four locations along the water supply line (laboratory reports in Appendix 4). The tap sample collected from the town office serves as an upgradient station; no contaminants were detected in this sample. Three water quality samples were collected from residences connected to the water system at locations downgradient of the Moon & Sons site. As summarized in the table on page 3 of Appendix 1, no contaminants were noted at the Robinson Hardware, Robinson residence, or Winona Robinson residence.

The samples collected from the storm drain system and the water supply system thus provide no evidence that contaminants had actually entered these pipelines at the time of sampling. However, the fact that contamination was detected in the utility trench in the past indicates that these pipelines remain at risk of future contamination.

3. The extent of utility trench contamination needs to be determined.

As proposed, a test pit was excavated at a location 75 feet west (downgradient) of pre-existing monitor wells MW-6 and MW-14. During this test pit excavation, which took place on September 9, 1994, PID readings of 0.2 ppm were recorded between 6" and 6' below ground surface (bgs). From 6 - 7' bgs, PID readings of 0.8 - 1.0 were recorded; the soils were moist in this interval. The storm drain line was encountered at 7' bgs. All soils were reported as "clean".

The monitor well installed in this excavation was sampled at the same time as the other wells on the site (September 16, 1994). As shown in the summary table and on the contaminant distribution map, no petroleum products were detected in the sample from this location. Since this location was "clean", no additional test pits were excavated.

The test pit excavation and sampling suggests that contamination has not migrated very rapidly along the utility trench.

At the original test pit excavation, 140 feet to the east, PID readings of 10 - 20 ppm were noted in the abandoned 2" water line bedding; similar readings, as well as a light petroleum sheen, were noted in soils in the area of the 8" active water line; and PID readings of 100 - 180 ppm as well as a heavy petroleum sheen were observed during excavation of the 18" storm drain line.

4. Due to possible sample labelling error, monitor wells 8s and 8d need to be resampled.

As specified in the final approved work plan, additional water quality samples were collected from all monitoring wells on the site. Wells MW-8d and MW-8s showed the same pattern in contaminant distribution as observed previously (August 16, 1993). That is, a significantly higher level of contamination was noted in the deep piezometer (8d). In addition, September 16, 1994 measurements of the total well depths confirmed that the wells are correctly labelled as "shallow" and "deep"; that is the total depth of MW-8s is 6.33 feet below top of pipe (btp), while that of MW-8d is 15.98 feet btp. Thus it appears that neither the sample bottles nor the wells themselves were mislabelled.

The consistent data from this well pair suggests that contaminants have penetrated to much greater depths on the site than previously anticipated; therefore the volume of soil affected by the former leaking underground storage tanks is concomitantly greater.

Other Observations

A summary table has been prepared showing all water quality analytical results since project initiation (page 4 of Appendix 1). This table includes results from 1990-91, when the site was referred to as the McDonough Service Station.

Historic data shows a dramatic improvement in water quality at MW-1, located immediately upgradient of the former UST area. Since the tanks have been removed, contamination at this location has virtually disappeared; this is probably attributable to continued flushing by groundwater. Contaminant concentrations also appear to be declining (albeit more slowly) at MW-3, just downgradient of the UST area. The presence of petroleum products at MW-12, within the former UST area, indicates that the site remains a contaminant source and that downgradient sensitive receptors are still at risk.

The increase in contaminants at MW-7 from August 1993 to September 1994 is evidence that hazardous materials continue to migrate towards the utility trench.

Recommendations

As we concluded in our previous report (December 1993), it appears that natural attenuation and passive degradation alone are not likely to prevent impact to neighboring properties. While no petroleum products have thus far been detected in the storm drain or water supply line, the continued presence and northward and downward migration of contaminants indicate that these receptors remain at risk.

We are concerned that the past evidence of petroleum products in the utility trench and the possibility of future contamination may pose an unacceptable risk to the 8" water line. This line is a component of the South Hero Fire District public community water system, which has approximately 200 connections (2/14/95 conservation with Mr. Guy Winch, a Prudential Committee member).

Given the circumstances, we feel it makes sense to attempt to intercept contaminants moving from the former UST area towards the utility trench. If the Sites Management Section agrees that this is important, we can discuss potential remediation options with you. It is also the ANR Water Supply Division's policy, in the case of a LUST near a water line for a public supply, that the Vermont Department of Health, the Water Supply Division, and the party responsible for the water system (in this case the Fire District) should all be made aware of the situation. At your direction, we will provide the appropriate notification.

If you have any questions regarding the information in this letter/report, or would like to discuss remediation options, please feel free to contact me or Jeff Noyes. We look forward to continued work with you on this and other projects.

Sincerely,

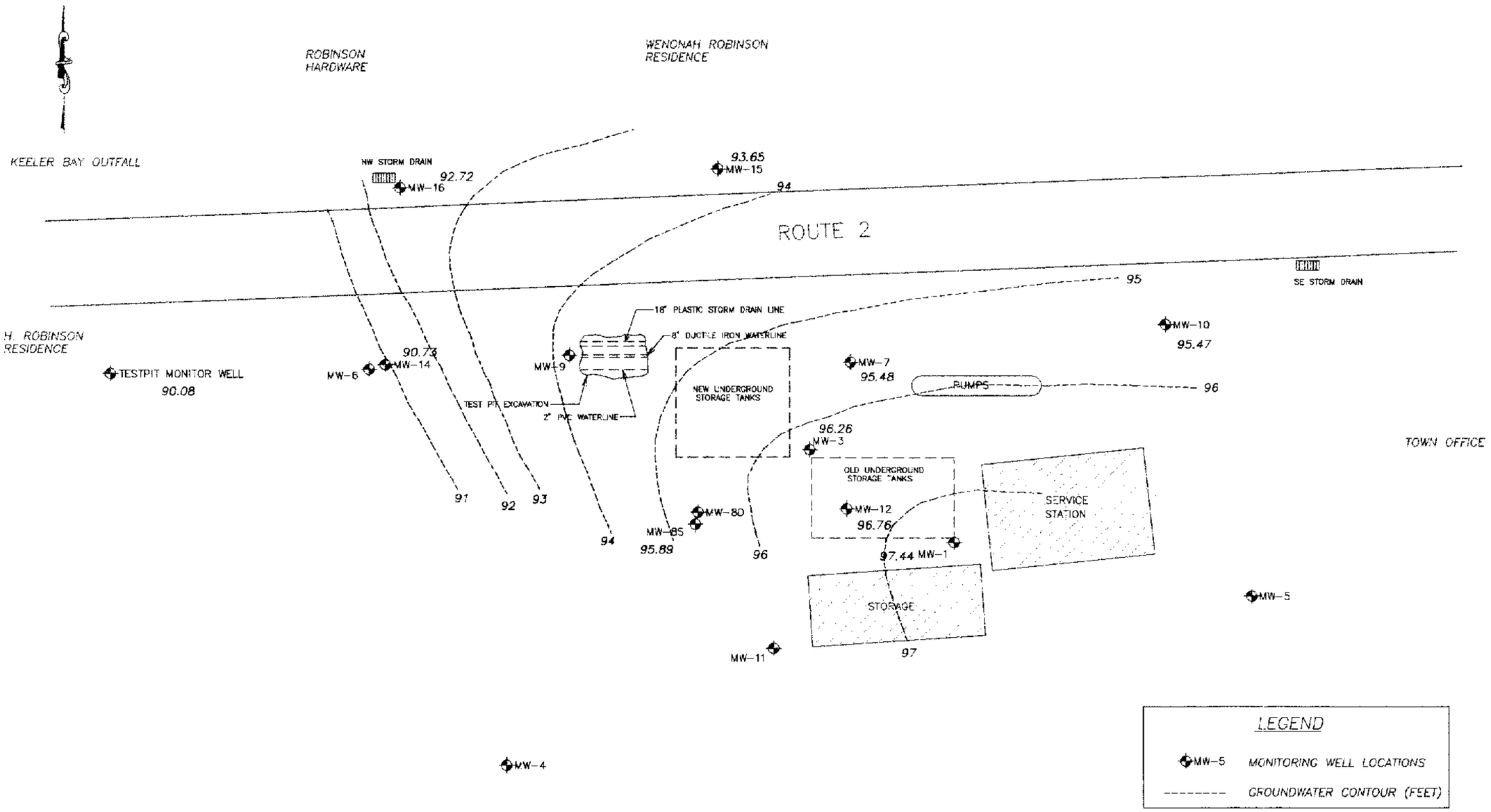
Nancy J. Caplow
Hydrogeologist

NJC/ew

Attachments

cc: Joe Merone, Midway Oil Corp.

[YOUNG.L1/NCAPLOW]



LEGEND

MW-5 MONITORING WELL LOCATIONS

GROUNDWATER CONTOUR (FEET)

NOTES:

- MONITOR WELL 15, 16, AND TESTPIT MONITOR WELL LOCATIONS SURVEYED BY M. MILLER AND D. REESE OF WAGNER, HEINDEL, AND NOYES, INC., ON SEPTEMBER 16, 1994.
- ONLY WELLS SCREENED IN SHALLOW AQUIFER WERE USED IN CONSTRUCTING THIS GROUNDWATER CONTOUR MAP.

DRAWN BY: M. Luman

APPROVED: N. Coplan

PROJECT NO. 93164

FILE: C:\MERONE\SITEPLAN

Wagner, Heindel, and Noyes, Inc.
CONSULTING SCIENTISTS AND ENGINEERS
• Hydrogeology • Ecology •
• Environmental Engineering •
P.O. BOX 1629 BURLINGTON, VERMONT 05402

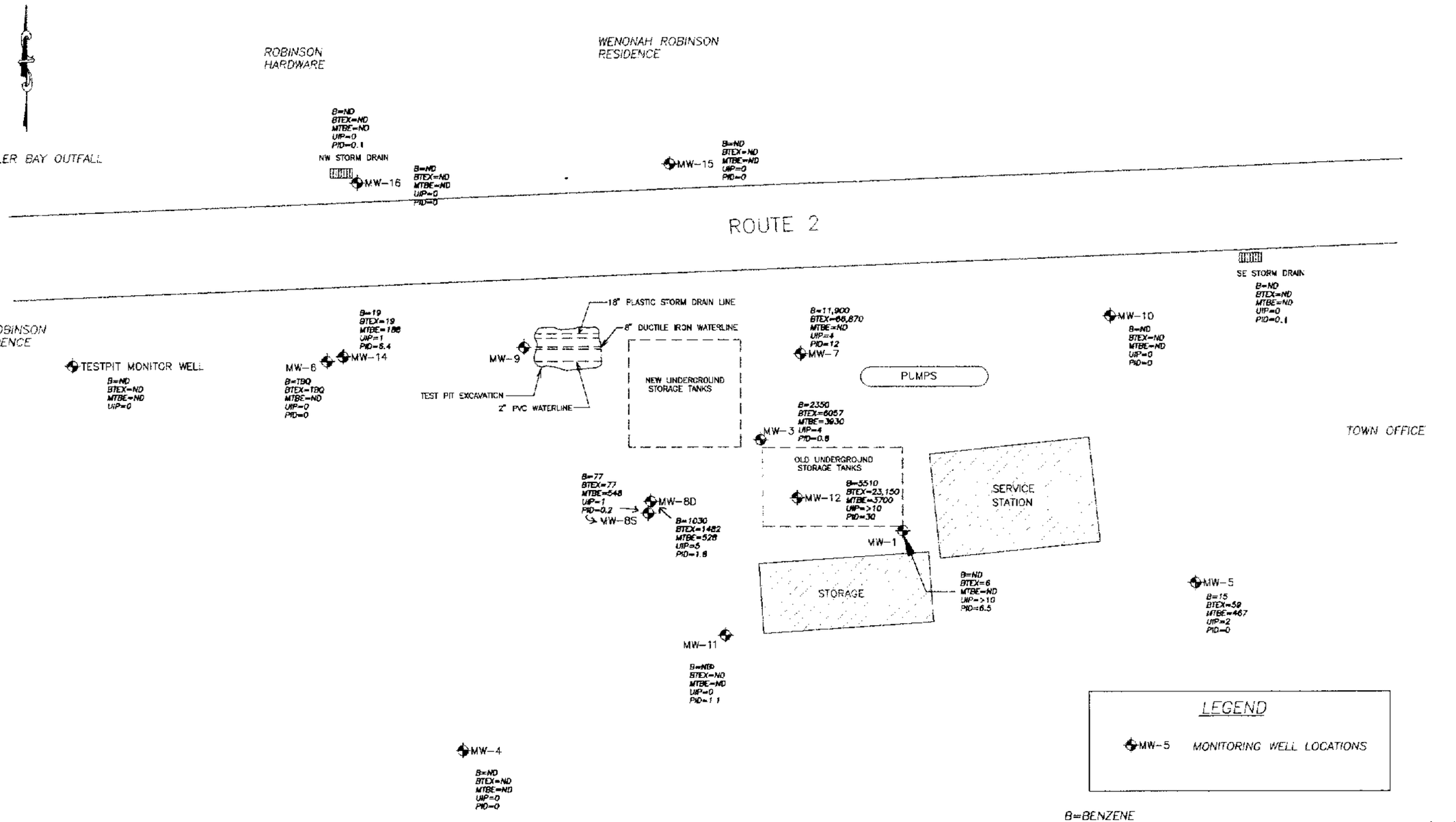
MERONE/MOON & SONS

SOUTH HERO, VERMONT

GROUNDWATER CONTOUR MAP (SEPTEMBER 16, 1994)

SCALE: 1"=30'

DATE: FEBRUARY 10, 1995



NOTES:

- MONITOR WELL 15, 16, AND TESTPIT MONITOR WELL LOCATIONS SURVEYED BY M. MILLER AND D. REESE OF WAGNER, HEINDEL, AND NOYES, INC., ON SEPTEMBER 16, 1994.
- ONLY WELLS SCREENED IN SHALLOW AQUIFER WERE USED IN CONSTRUCTING THIS GROUNDWATER CONTOUR MAP.

B=BENZENE
BTEX=BENZENE + TOLUENE + ETHYLBENZENE + XYLENES (ppb)
MTBE=METHYL TERT BUTYL ETHER (ppb)
UIP=UNIDENTIFIED PEAKS
ND=NONE DETECTED
TBQ=TRACE BELOW QUANTITATION
PID=ppm

DRAWN BY: M. Luman
APPROVED: M. Caplow
PROJECT NO. 93164
FILE: C:\MERONE\SITEPLAN

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MERONE/MOON & SONS
SOUTH HERO, VERMONT
CONTAMINANTS IN GROUNDWATER (SEPTEMBER 16, 1994)
SCALE: 1"=30'
DATE: FEBRUARY 10, 1995

Moon & Sons
Water Quality
Summary Table

Sampled: September 16, 1994

	Location	Compounds / Parameters						
		Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	Xylene (ug/L)	Total BTEX	MTBE (ug/L)	Unidentified Peaks
Groundwater Monitoring Well Sampling	MW - 1	ND	ND	ND	6	6	ND	> 10
	MW - 3	2,350	677	1,330	1,700	6,057	3,930	4
	MW - 4	ND	ND	ND	ND	ND	ND	0
	MW - 5	15	ND	30	14	59	467	2
	MW - 6	TBQ	ND	ND	ND	TBQ	ND	0
	MW - 7	11,900	3,470	32,900	18,600	66,870	ND	4
	MW - 8d	1,030	193	56	203	1,482	528	5
	MW - 8s	77	ND	ND	ND	77	548	1
	MW - 10	ND	ND	ND	ND	ND	ND	0
	MW - 11	ND	ND	ND	ND	ND	ND	0
	MW - 12	5,510	2,690	2,250	12,700	23,150	3,700	> 10
	MW - 12 dup	5,350	2,500	2,100	11,900	21,850	3,650	> 10
	MW - 14	19	ND	ND	ND	19	188	1
	MW - 15	ND	ND	ND	ND	ND	ND	0
	MW - 16	ND	ND	ND	ND	ND	ND	0
	Test Pit Well	ND	ND	ND	ND	ND	ND	0
Drinking Water System Tap Sampling	Town Office	ND	ND	ND	ND	ND	ND	0
	Robinson H Dwre	ND	ND	ND	ND	ND	ND	0
	H. Robinson Residence	ND	ND	ND	ND	ND	ND	0
	Wenonah Robinson	ND	ND	ND	ND	ND	ND	0
Storm Drain System Sampling	Keeler Bay Outfall	ND	ND	ND	ND	ND	ND	0
	SE Storm Drain	ND	ND	ND	ND	ND	ND	0
	NW Storm Drain	ND	ND	ND	ND	ND	ND	0

NOTES
ND = None Detected
TBQ = Trace Below Quantitation limit

[Revised: 10-Feb-95 File: U:\GREGG\SPRDSHT\MISCELL\MOON-SON.WB1]

Former Moon & Sons Service Station
(McDonough Service Station; South Hero Mobil & Quick Stop)

Summary of Water Quality Sampling
(all concentrations in ug/L, ppb)

Date	Contaminant	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8s	MW-8d	MW-9	MW-10	MW-11	MW-12	MW-14	MW-15	MW-16	TP well
04/3/90	Benzene	970	890	665	1.3	ND	ND											
	Ethylbenzene	390	240	140	ND	ND	ND											
	Toluene	3,670	1,010	346	2.1	ND	1.3											
	Xylenes	14,610	3,000	902	ND	ND	ND											
	Total BTEX	19,640	5,140	2,053	3.4	ND	1.3											
	MTBE	29,260	2,450	2,830	ND	18.1	10.6											
	UIP	NA	NA	NA	NA	NA	NA											
06/26/90	Benzene	921	2,180	1,960	ND	ND	ND											
	Ethylbenzene	76	103	93	ND	ND	ND											
	Toluene	3,820	772	1,160	ND	ND	ND											
	Xylenes	13,500	3,790	1,540	ND	ND	ND											
	Total BTEX	18,317	6,845	4,773	ND	ND	ND											
	MTBE	21,300	2,670	7,780	ND	425	7.04											
	UIP	NA	NA	NA	NA	NA	NA											
10/08/90	Benzene	802		8,000	ND	ND	ND											
	Ethylbenzene	480		2,830	ND	ND	ND											
	Toluene	7,070		13,000	ND	ND	ND											
	Xylenes	15,300		12,600	ND	ND	ND											
	Total BTEX	23,752		37,430	ND	ND	ND											
	MTBE	3,050		21,400	ND	1,020	ND											
	UIP	NA		NA	NA	NA	NA											
01/18/91	Benzene	487		5,450	ND	ND	ND											
	Ethylbenzene	429		1,260	ND	ND	ND											
	Toluene	4,890		5,560	ND	ND	ND											
	Xylenes	12,800		6,150	ND	ND	ND											
	Total BTEX	18,606		18,460	ND	ND	ND											
	MTBE	1,470		15,300	ND	854	ND											
	UIP	2		5	0	0	0											
08/16/93	Benzene	TBQ		6,810	ND	1.3	ND	7,540	174	1,180	88.2	ND	ND	4,780	731			
	Ethylbenzene	17.4		2,940	ND	ND	ND	2,880	33.3	1,090	233	ND	ND	292	189			
	Toluene	13		5,320	ND	ND	ND	27,500	93.7	4,340	58.6	1.3	ND	2,740	337			
	Xylenes	486		9,850	ND	ND	ND	20,500	138	5,950	971	5.3	ND	13,000	570			
	Total BTEX	516		27,920	ND	1.3	ND	58,420	439	12,560	1,351	6.6	ND	20,812	1,827			
	MTBE	ND		5,750	ND	137	ND	1,450	307	525	1,380	10.3	ND	2,400	275			
	UIP	>25		12	0	0	0	18	24	>25	>25	3	0	>25	16			
08/16/94	Benzene	ND		2,350	ND	15	TBQ	11,900	77	1,030		ND	ND	5,510	19	ND	ND	ND
	Ethylbenzene	ND		677	ND	ND	ND	3,470	ND	193		ND	ND	2,990	ND	ND	ND	ND
	Toluene	ND		1,330	ND	30	ND	32,900	ND	58		ND	ND	2,250	ND	ND	ND	ND
	Xylenes	6		1,700	ND	14	ND	18,900	ND	203		ND	ND	12,700	ND	ND	ND	ND
	Total BTEX	6		6,057	ND	59	TBQ	66,870	77	1,482		ND	ND	23,150	19	ND	ND	ND
	MTBE	ND		3,930	ND	467	ND	ND	548	528		ND	ND	3,700	186	ND	ND	ND
	UIP	>10		4	0	2	0	4	1	5		0	0	>10	1	0	0	0

NA Not Available
ND = None Detected
UIP = Unidentified Peaks

NOTES: MW-2 paved over between June and October 1990
MW-8 buried by gravel between August 1993 and September 1994

U:\NCAPLOW\SPROSHT\MOONSONS\WQSUM.WQ1

Merone, Moon & Sons
South Hero, Vermont

Well #	Assumed Elev.* (ft)	Top of pipe Elev. (1) (ft)	Top of pipe Elev. (2) (ft)	Depth to Groundwater, 9/16/94 (ft btp)	Groundwater Elev. (2) 9/16/94 (ft btp)
TBM	100.00			-	-
1		99.20	100.00	2.56	97.44
3		98.18	98.98	2.72	96.26
4		96.91	97.71	7.88	89.83
5		98.88	99.68	8.42	91.26
6		97.58	98.38	8.09	90.29
7		97.92	98.72	3.24	95.48
8s		98.17	98.97	3.08	95.89
8d		97.83	98.63	2.70	95.93
9	Could not locate under new gravel.				
10		98.87	99.67	4.20	95.47
11		98.17	98.97	2.75	96.22
12		98.67	99.47	2.71	96.76
14		95.42	96.22	5.49	90.73
15		96.60	97.40	3.75	93.65
16		95.81	96.61	3.89	92.72
Test Pit MW		94.38	95.18	5.10	90.08

Notes:
Survey performed by M. Miller and D. Reese on October 21, 1994.
* Temporary Benchmark established at corner of garage on concrete footing.
(1) Based on TBM established on 10/21/94.
(2) Corrected to original survey, with assumed elevation for MW-1 as 100.00 feet.

FILE: U:\MM\LLER\SPRDSHT\MERMOON2.WQ1

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
REVISED REPORT: October 4, 1994

PROJECT CODE: HNMS1506
REF.#: 64,637 - 64,657

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated preservation with NaN_3.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results. Due to holding time constraints, samples 64,653, 64,654, 65,655 were analyzed by EPA Mehtod 8240.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,649
STATION: MW1
TIME SAMPLED: 17:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	6.1
MTBE	10	ND

Bromobenzene Surrogate Recovery: 91%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,650
STATION: MW3
TIME SAMPLED: 18:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	100	2,350.
Chlorobenzene	100	ND[2]
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	677.
Toluene	100	1,330.
Xylenes	100	1,700.
MTBE	1000	3,930.

Bromobenzene Surrogate Recovery: 103%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 4

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.

2 None detected

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,644
STATION: MW4
TIME SAMPLED: 15:45
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 79%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,643
STATION: MW5
TIME SAMPLED: 16:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	5	15.3
Chlorobenzene	5	ND[2]
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	ND
Toluene	5	29.5
Xylenes	5	13.7
MTBE	50	467.

Bromobenzene Surrogate Recovery: 122%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 2

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.

2 None detected

ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,638
STATION: MW6
TIME SAMPLED: 11:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	TBQ[1]
Chlorobenzene	1	ND[2]
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 76%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 Trace below quantitation limit
2 None detected

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,648
STATION: MW7
TIME SAMPLED: 17:15
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	500	11,900.
Chlorobenzene	500	ND[2]
1,2-Dichlorobenzene	500	ND
1,3-Dichlorobenzene	500	ND
1,4-Dichlorobenzene	500	ND
Ethylbenzene	500	3,470.
Toluene	500	32,900.
Xylenes	500	18,600.
MTBE	5000	ND

Bromobenzene Surrogate Recovery: 115%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 4

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 0.2% dilution.

2 None detected

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,646
STATION: MW8S
TIME SAMPLED: 17:00
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	5	76.6
Chlorobenzene	5	ND[2]
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	ND
Toluene	5	ND
Xylenes	5	ND
MTBE	50	548.

Bromobenzene Surrogate Recovery: 84%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,647
STATION: MW8D
TIME SAMPLED: 17:50
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	20	1,030.
Chlorobenzene	20	ND[2]
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	193.
Toluene	20	55.8
Xylenes	20	203.
MTBE	200	528.

Bromobenzene Surrogate Recovery: 90%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 5

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 5% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,642
STATION: MW10
TIME SAMPLED: 15:15
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 73%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,645
STATION: MW11
TIME SAMPLED: 16:20
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 77%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,651
STATION: MW12
TIME SAMPLED: 18:50
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	100	5,510.
Chlorobenzene	100	ND[2]
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	2,690.
Toluene	100	2,250.
Xylenes	100	12,700.
MTBE	1000	3,700.

Bromobenzene Surrogate Recovery: 109%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,652
STATION: MW12 Dup1
TIME SAMPLED: 18:50
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	100	5,350.
Chlorobenzene	100	ND[2]
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	2,500.
Toluene	100	2,100.
Xylenes	100	11,900.
MTBE	1000	3,650.

Bromobenzene Surrogate Recovery: 107%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,639
STATION: MW14
TIME SAMPLED: 13:15
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	5	18.9
Chlorobenzene	5	ND[2]
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	ND
Toluene	5	ND
Xylenes	5	ND
MTBE	50	188.

Bromobenzene Surrogate Recovery: 95%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,641
STATION: MW15
TIME SAMPLED: 14:10
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 70%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,640
STATION: MW16
TIME SAMPLED: 14:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 84%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 29, 1994

PROJECT CODE: HNMS1506
REF.#: 64,637
STATION: Test Pit
TIME SAMPLED: 12:45
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 74%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994

PROJECT CODE: HNMS1506
REF.#: 64,656
STATION: Trip Blank
TIME SAMPLED: 8:00
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromofluorobenzene Surrogate Recovery: 85%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8010/8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Merone Moon and Son
REPORT DATE: September 29, 1994
DATE SAMPLED: September 20, 1994
DATE RECEIVED: September 20, 1994
ANALYSIS DATE: September 28, 1994

PROJECT CODE: HNMS1522
REF.#: 64,683
STATION: Town Office
TIME SAMPLED: 8:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Dichlorodifluoromethane	10	ND[1]
Chloromethane	10	ND
Vinyl Chloride	10	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane	2	ND
Acetone	50	ND
1,1-Dichloroethene	2	ND
Methylene Chloride	20	ND
Carbon Disulfide	7	ND
MTBE	3	ND
trans-1,2-Dichloroethene	2	ND
1,1-Dichloroethane	2	ND
2-Butanone	20	ND
Chloroform	10	75.0
1,1,1-Trichloroethane	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloroethane	1	ND
Benzene	1	ND
Trichloroethene	1	ND
1,2-Dichloropropane	1	ND
Bromodichloromethane	1	4.4

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REF.#: 64,683

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	1	ND
Toluene	2	ND
trans-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	2	ND
2-Hexanone	10	ND
Tetrachloroethene	2	ND
Dibromochloromethane	2	ND
Chlorobenzene	2	ND
Ethyl Benzene	1	ND
Total Xylenes	3	ND
Styrene	1	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3 Dichlorobenzene	2	ND
1,4 Dichlorobenzene	2	ND
1,2 Dichlorobenzene	2	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

ANALYTICAL SURROGATE RECOVERY:

1,2-Dichloroethane-d4 : 103.%
Toluene-d8 : 103.%
4-Bromofluorobenzene : 89.%

NOTES:

1 None detected

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 8020--COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994
REVISED REPORT: October 4, 1994

PROJECT CODE: HNMS1506
REF.#: 64,653
STATION: Robinson H Dwre
TIME SAMPLED: 15:50
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromofluorobenzene Surrogate Recovery: 88%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 8020--COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994
REVISED REPORT: October 4, 1994

PROJECT CODE: HNMS1506
REF.#: 64,654
STATION: H. Robinson Res.
TIME SAMPLED: 16:10
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromofluorobenzene Surrogate Recovery: 86%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 8020--COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Moon & Son
REPORT DATE: October 1, 1994
DATE SAMPLED: September 16, 1994
DATE RECEIVED: September 19, 1994
DATE ANALYZED: September 30, 1994
REVISED REPORT: October 4, 1994

PROJECT CODE: HNMS1506
REF.#: 64,655
STATION: Wenonah Robinson
TIME SAMPLED: 16:20
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromofluorobenzene Surrogate Recovery: 86%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected